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# HARVESTING SOY-BEAN SEED

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**S**OY BEANS yield more seed per acre and are more cheaply harvested than any other variety of bean.

The large commercial use of the soy bean for oil and for stock feed and the increased use of this bean for human food have resulted in an enormous increase in the acreage.

Soy beans for seed can be harvested with various farm implements, including the corn knife, the mower, the self-rake reaper, the self-binder, and the bean harvester, besides specially patented machines which harvest and thrash the seed at the same time.

Soy beans are easily cracked or split in thrashing. The best way to avoid this with the ordinary thrashing machine is to remove some of the concaves and reduce the speed of the cylinder one-half.

Machines constructed especially for thrashing soy beans are on the market. In any community where there is a considerable acreage of soy beans the purchase of one of these machines for community use will be found profitable.

Where only a small area of soy beans is grown the seed may be satisfactorily thrashed by flailing.

Soy-bean straw, after the seed has been thrashed, is a valuable feed. In some sections this is baled and sold on the market.

Soy-bean seed should be thoroughly dry before being stored. Only under exceptional conditions are soy-bean seeds attacked by weevils.

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## THE SOY BEAN AS A SEED CROP.

THE character of growth, the uniform maturing habit, and the heavy seed yields of the soy bean contribute to the ease of harvesting and recommend the plant for seed production. The many disadvantages which attend the harvesting of cowpeas for seed are not common to the soy bean. When grown for grain alone the shattering of the pods of the soy bean is a serious fault, and inexperienced growers are likely to sustain a heavy loss of seed through lack of knowledge and improper handling of the soy-bean plant.

All soy beans are strictly determinate as to growth—that is, the plants reach a definite size, according to variety and environment, and then mature and die. Nearly all varieties shatter their seed somewhat, especially during changeable weather, if not harvested at the proper stage of maturity. Some varieties, like the Guelph or Medium Green, shatter inordinately, while others, such as the Peking, scarcely at all. Special attention, therefore, is required when the plants approach maturity to prevent serious losses from the shattering of the pods.

## TIME OF HARVESTING.

When the soy-bean plant is near maturity, the leaves begin to turn yellow and drop; and before all of the pods are mature the leaves, except in a few varieties, have all fallen off. In general, the best time to harvest, except where special bean harvesters are used, is when about three-fourths of the leaves have fallen and most of the pods have turned color. If cut at an earlier stage the plants are difficult to cure properly, and the yield will be lessened materially on account of the immature grain. On the other hand, if the plants are allowed to become too ripe the pods will shatter before being cut, and much seed will be lost. When special harvesters are used to gather the seed, the plants must reach full maturity to obtain the best results.

The stage of maturity to which the plants should be allowed to grow varies also with regard to season and variety. In a hot, dry fall the plants should be cut at an earlier stage than in a cool, moist



FIG. 1.—Mowing machine with side-delivery attachment.

fall. Some few varieties, however, can be left with little or no loss of seed until time of maturity in any season.

#### METHODS OF HARVESTING.

Various methods of harvesting the crop are used in different sections where the soy bean is grown largely for seed production. When the cutting is done with a mowing machine, it is well to have a side-delivery attachment (fig. 1), in order that the horses will not need to trample on the swath of cut beans. If cut with a mower without such an attachment, however, the plants should be removed at every round out of the way of the team, for if trampled upon many of the seeds will be shelled out and wasted.

The self-rake reaper (fig. 2) has given very satisfactory results, as the plants are placed in bunches out of the way of the machine and team.

The self-binder can be used to good advantage with the taller growing varieties of beans if the plants are not too coarse. This



FIG. 2.—Self-rake reaper used in cutting soy beans for seed.

method of harvesting is coming rapidly into favor in many sections. For the best results with this machine the plants should be cut while some of the leaves are still retained, as the plants will cut more easily and no loss will result from shattering.

#### The bean harvester

which is used to a slight extent in a few Northern States is mounted on wheels like a riding cultivator. It has knives that can be adjusted to run just beneath the surface of the ground, cutting the plant where it is soft. This machine will cut two rows at a time and place both in a windrow for curing and convenient for handling.

To do good work, the cutting knives must be kept sharp; otherwise the plants will be pulled out by the roots instead of being cut off.

Small areas may be cut with a scythe, corn knife or sickle. In some sections comparatively large acreages are cut in this manner.

#### METHODS OF CURING AND HANDLING.

When cut with a mowing machine with an attachment or with a self-rake reaper, the beans may be raked in

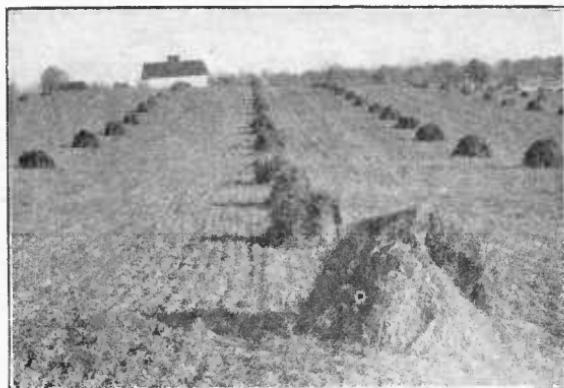


FIG. 3.—Soy beans cut for seed with a binder and the shocks set in rows so that wheat can be sown without waiting to remove the beans from the field.



FIG. 4.—A single-drum web loader, commonly used for haying. This will load the soy beans rapidly and with less loss of seed than would result in hand gathering.



FIG. 5.—Thrashing soy beans from the field in eastern North Carolina with an ordinary gasoline thrashing outfit.

small piles or placed in small shocks. These piles or shocks should be left for four or five days in good drying weather, or until the grain is found to be fairly dry in the pods. Wet weather does not injure the crop seriously provided the plants are not allowed to rest on the ground long at a time. If rain occurs, the piles should be watched carefully and turned frequently.

Where a binder is used the bound bundles should be shocked 8 or 10 to a shock (fig. 3) and allowed to remain until thoroughly dry.

Hay caps are not necessary when the piles or bundles are shocked properly. They may remain in the field until thrashing time, or if thoroughly dry they may be housed and thrashed later.

The cured plants are ordinarily gathered from the field by hand, but the web loader (fig. 4) commonly used for haying will do the work more rapidly and with less loss of seed than the hand methods.

#### THRASHING.

The ordinary grain separator (fig. 5) can be adjusted to thrash any beans successfully, but as equipped for small grains a large percentage of cracked beans will result. The chief cause of split beans is the high speed of the cylinder, which should be reduced at least one-half, but the speed of the fans and other parts of the separator should be maintained. This may be accomplished by doubling the size of both cylinder pulleys. In some cases a special set of thin concaves is used, while in other instances some of the concaves are removed. Good judgment on the part of the thrasher will enable him to adjust the ordinary separator so that the beans may be

thrashed with little splitting. Some manufacturers have special pea and bean hulling attachments for grain separators, which are said to do very satisfactory work. These attachments may be added to the ordinary separator at a small cost.

Special pea and bean separators of different sizes are now on the market. These types of machines do clean hulling and split practically none of the beans. Undoubtedly such separators are more satisfactory and economical where a considerable acreage of beans is grown. In sections where there is extensive seed production, investment in such a machine by the community would be profitable.

Soy beans, if thoroughly dry, can easily be thrashed with a flail. If one has only a small acreage—an acre or so—this method is practicable and economical.

In a few sections a corn shredder has been used to advantage. If properly cured and dried, the beans shell out very readily with this machine.

#### SPECIAL BEAN HARVESTERS.

The harvesting of seed from the mature standing vines by means of patented bean harvesters, of which there are several types, is rapidly gaining in popularity in sections where the soy bean is grown rather extensively. The commonest type is a 2-wheeled, boxlike machine and is drawn by two horses (fig. 6). As the machine passes over the row of plants, four sets of rapidly revolving arms shatter the beans from the pods into the body of the harvester. As the machine moves up the row, the seed is gradually raked by a man to the rear of the box. To secure the best results the rows should be ridged, though a recently patented machine is suitable either for ridged or level rows. Under favorable conditions, two men with a team can harvest 1 acre in two hours by this method. Although there is some loss of beans, it is more than compensated by the saving of time and labor.

#### SOY-BEAN STRAW.

The straw obtained from thrashing the soy bean for seed is a valuable feed for all kinds of stock. In



FIG. 6.—A special bean harvester used in gathering the soy-bean seed from the standing mature plants.

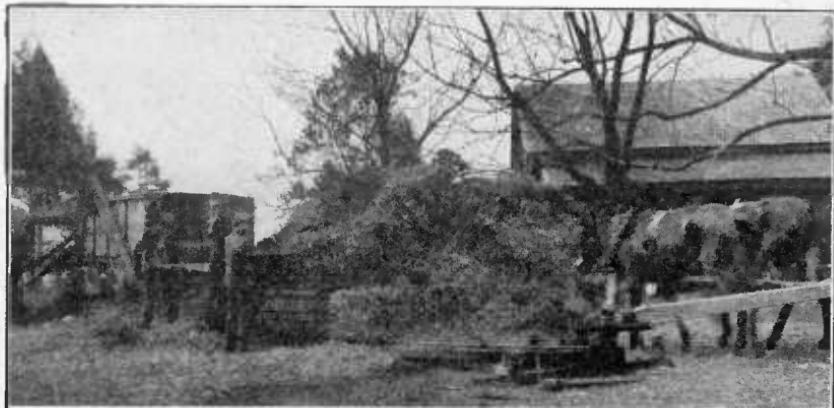


FIG. 7.—Baling soy-bean straw direct from the thrasher.

many sections the straw is baled at the time of thrashing (fig. 7) and sold in the immediate locality to liverymen, dairymen, and stock feeders.

#### STORAGE OF SEED.

As soy-bean seed spoils rather easily if not properly handled, care should be exercised in curing and storing. After the beans are thrashed they should be watched carefully to avoid heating and molding. When thoroughly dry there is no such danger. The best plan, perhaps, is to spread the seeds out on a floor immediately after thrashing and shovel them over from time to time until they are thoroughly dry. After this they may be safely put into sacks or bins. The storeroom should be dry and have a free circulation of air. Soy-bean seed loses its viability rather rapidly, and it is not safe to hold seed for planting purposes more than two seasons. The seeds of the soy bean, unlike those of the cowpea, are rarely attacked by weevils or other grain insects.

